

THE STUDY OF ECONOMICS.

The New Cambridge Curriculum in Economics. By Alfred Marshall. Pp. 34. (London: Macmillan and Co., Ltd.) Price 1s. 6d.

"IN the United States of America, in particular, and in Germany, the subjects of Economics and Political Science are commonly represented by a strong and numerous staff, and afford the main route by which large numbers of students obtain University Honours. . . . England, on the other hand, which long held undisputed leadership in Economics, has suffered in recent years from the lack of adequate provision for the study of that subject at the Universities."

From all sides evidence is forthcoming of attempts to remedy this defect. There is a widespread revival of interest in the subject-matter of economics, and a corresponding determination on the part of its teachers to seize the opportunity to place the subject on firmer and broader foundations in the schools. Development has taken place in several directions. The "monarchical" supremacy of Mill was broken up in the 'seventies by Jevons, Cliffe Leslie, Bagehot and others. In 1890, Prof. Marshall published the first edition of the first volume of his "Principles." In the last three decades of the nineteenth century economics lost much of its insularity on the one hand, and gained in human interest on the other. The work of economists in Germany, Austria, and the United States broadened the horizon and tested the conclusions of the native researcher by an appeal to a richer experience. The advent of the working-classes to political power and the influence of a cheap Press kept social questions ever prominent, and ideas of material well-being, efficiency and comfort occupied an increasing part of economic reflection. The writings of Mr. Charles Booth, Mr. Sherwell, the Rowntrees, Mrs. Bosánquet, and other investigators have recently enjoyed a wide currency in various pure and diluted forms, and have driven many to study economics in a systematic fashion. Municipal enterprise has had a similar effect. With all these writers and students the ruling motive has been the desire to lessen poverty and to improve the quality of human life. In the book before us, Prof. Marshall voices this practical aim in a significant passage:—

"The motto of Sidgwick's 'Political Economy' is: 'Things are in the saddle and ride mankind.' What had made men become economists, in three cases out of four, was the belief that in spite of our growing command over nature it is still things that are in the saddle, still the great mass of mankind that is oppressed—oppressed by things. The desire to put mankind into the saddle is the mainspring of most economic study."

But not only has there been a quickening of interest in the condition of the people at home. The sense of imperial responsibility has deepened. Schemes of federation, sentimental and economic, have filled the air. The competition of advancing rivals has made itself felt in our markets. We have been driven to ask with Sir Robert Giffen, Is the central force of the Empire, the power to hold it together, increasing as rapidly as the Empire generally? It would be fatal while widening the circumference to weaken the

centre; to fix the spokes in a rotting hub. The Empire drains the home country of valuable administrative energy of which it never has too much for high social efficiency. And in business, managers of elastic minds, wide outlook, and great organising power, in command of large masses of capital are still relatively scarce.

It is unnecessary to point out how the controversy of the last few months has impressed impartial observers with the complexity of practical economic problems, and with the urgency of studying these problems in an atmosphere uncharged with the passion of parties. The people are suddenly confronted with political choices of international moment, and their instructors are too often politicians and pressmen whose hastily acquired information displays all the symptoms of indigestion. Can the universities do something to provide the nation with more capable administrators for central and municipal government, and for the diplomatic and consular services? Can they train men for the supreme positions in the industrial and commercial world? Prof. Marshall's booklet tells us that the University of Cambridge has answered in the affirmative by instituting a new honours school in economics and associated branches of political science, and it supplies us with the ideas which have guided the Senate in framing the curriculum. This is not the place to make detailed comparisons with the similar courses newly arranged in the Universities of London, Birmingham, and Victoria. Speaking broadly, the Cambridge curriculum makes its appeal to advanced students who will be called upon to decide main questions of policy in politics and industry rather than to subordinates who wish to be equipped in the technique of administration and business. It is theoretical and scientific rather than practical and professional. Only shallow thinkers will infer that, on this account, it is out of touch with reality. Prof. Marshall is under no illusion on this point. His little book is a plea for a training which, while it fits a man for his duties as a citizen, never loses sight of the practical demands made upon the employer and the civil servant in these strenuous days. Prof. Marshall himself is his own best argument, for these pages mirror the wisdom and fairness and humility and idealism of a life devoted to economic study.

T. J.

OUR BOOK SHELF.

A Treatise on Electromagnetic Phenomena and on the Compass and its Deviations Aboard Ship. Vol. ii. By Commander T. A. Lyons, U.S. Navy. Pp. vii+582. (New York: Wiley and Sons; London: Chapman and Hall, Ltd., 1903.) Price 25s. 6d. net.

SOME forty years ago there appeared the second edition of the "Admiralty Manual for Deviations of the Compass," and as the compass is "the soul of the ship," so the teaching of that manual remains the soul of the numerous works on the subject which different maritime countries have since published, albeit that chapters on cognate subjects may have been added thereto. Naturally America has provided her quota, and this book is her latest contribution.

This second volume of the treatise, which is devoted to the "compass and deviations aboard ship," can hardly be fully mastered until after reading the first volume, but it is in a great measure complete in itself, especially to those who have already some knowledge of terrestrial magnetism. All will agree with the author of this book when he insists upon the necessity for every navigator knowing as much as possible about his compass and that magnet—his ship—which is ever in antagonism to the earth, which does its best to direct the compass to magnetic north.

Of the five parts into which this volume is divided, part ii. treats of the manufacture of the liquid compass (the only kind in use in the U.S. Navy), giving in full detail the principles of magnetism and mechanics connected with its construction and use afterwards.

In part iii. the ship is shown to be a magnet by experimental magnetic surveys of ships illustrated by diagrams. The physical representation of the theory of the deviation of the compass is fully given, but decided exception must be taken to the instructions for determining the position of the compass after the ship is launched. It is then too late, and the experienced Superintendent of Compasses and the constructors should long before have agreed upon a place for it in the ship's drawings, and afterwards worked in harmony to keep iron fittings at a proper distance.

Part iv. treats of the mathematical theory of the deviations of the compass, and here, as in other of the mathematical investigations he gives, the author gives valuable assistance to those who are not skilled mathematicians by "filling up those gaps in the sequence of the formulas that often yawn forbiddingly."

On the question of compensation of the deviations of the compass, to which part v. is devoted, we have the least satisfactory part of the book. Thus the formula for correcting the heeling error with spheres in place is very convenient in practice, but not mathematically correct. The instructions for compensating the secondary part of the quadrantal deviation known as coefficient E by spheres are incorrect. Again, the residuary quadrantal deviation, after compensation, is described as "practically constant the world over"; but this is certainly not so in the example given of the "Machias," where, between Aden and Pechili Strait, the quadrantal deviation differed nearly 3° , as might be expected where soft iron correctors are placed near the long powerful needles of the Ritchie compass. Further, the Flinders bar will not compensate any important part of the heeling error due to soft iron as here proposed.

There is much to recommend this book to the student, both as regards the mathematical treatment of the subject and for its numerous explanatory diagrams. Its weak point lies in the parts relating to the application of theory to practice, which require modernising and a careful revision. E. W. C.

Comité international des Poids et Mesures. Procès-Verbaux des Sciences. Deux. Série. Tome ii. Session de 1903. Pp. 170. (Paris: Gauthier-Villars, 1903.)

THE *Procès-Verbaux* recently issued by the Comité international des Poids et Mesures refers to their meeting at Paris in April last. The committee included Dr. W. Foerster (president), Prof. P. Blazerna (secretary), Dr. Benoit (director of the bureau), and MM. Arndsten, D'Arrillaga, de Bodola, Egoroff, Gautier, Hasselberg, and von Lang. Their proceedings mainly had reference to the work at their bureau (Pavillon de Breteuil, Sèvres, Paris) for the current year, including the consideration of the annual expenses of the committee (100,000 francs).

The committee lament the death of their distinguished colleague, Prof. A. Cornu, on April 12 last, and also of Dr. H. von Wild, September 5, 1902, an honorary member of the committee. They announce the unanimous election on the committee of M. E. Mascart, and of Dr. A. Chappuis as an honorary member. Count de Macedo (Portugal), Dr. A. Michelson (United States), and Mr. H. J. Chaney (Great Britain) were unable to attend the present meeting.

During the past year the verification of length standards at the bureau included standards for the Board of Trade, the Education Department, the National Physical Laboratory, and other authorities in England. On the application of the British Government, indeed, an important work was undertaken by the committee, that of the graduation and verification of a new linear standard of the metre and yard, a standard made of iridio-platinum, X section.

Although the scientific work of the bureau last year does not appear to have covered a wide field, it has followed important paths, as in some investigations (Appendix iii.) as to the linear expansion by heat of platinum, iron, nickel, steel, glass, and quartz, and the results reported by the committee are now probably among the most authoritative of such thermometric investigations. Dr. C. E. Guillaume also adds (Appendix i.) an essay on the theory of the alloys of steel and nickel, and M. E. Sauvage (Appendix ii.) an account of an international series of screw-threads, based on metric measure, as formulated at a congress held at Zürich in 1898-1900, a series which appears to be now adopted for engineering purposes in France.

Flora of the Island of Jersey. By L. V. Lester Garland. Pp. xv+205. (London: West, Newman and Co., 1903.)

ALTHOUGH in most parts of the country a botanist can generally make a goodly collection of plants within a day's journey of his residence, there is always a desire to visit those localities in the British Isles which have a special flora of their own. Such are the Scotch mountain ranges, the counties of Devon and Cornwall, and by no means the least interesting to the southerner, the Channel Islands. On these visits it is a great boon to have a flora which will give the information where certain plants may be sought. For Guernsey and the adjacent islands of Alderney and Sark, Mr. Marquand has published records, and no less welcome is the compact little book which Mr. Lester Garland has compiled on the flora of Jersey. The book presents one essentially new feature, since the system adopted is that of Engler. Some excuse is offered for the innovation, but there can be no question that Engler's system is bound to supplant that of the "Genera Plantarum," and considerable credit is due to the author for acting up to his convictions. In conformity with this change some of the generic names have been altered, and *Erucastrum*, *Lobularia*, and *Parentucellia* take the place of others more familiar; for the same reason *Tillaea muscosa*, L., becomes *Crassula Tillaea*, Lester. No trouble has been spared to test uncertain or critical species and records, and the notes on these are sound and practical; also distinction is made between native plants and aliens. The genus *Centaurea* serves to illustrate the author's caution and care; he declines to split up *Centaurea nigra* into uncertain varieties, queries *Centaurea scabiosa*, accepts *Centaurea scabra*, and classes the species *cyanus*, *paniculata*, *calcitrapa*, *solstitialis* among the aliens. The last few pages are devoted to an account of the geographical distribution and affinities of species, and these complete a book which, in addition to its convenient form, is to be recommended for its extremely practical and scientific value.